

Chapter : 19. GRAPHS OF TRIGONOMETRIC FUNCTIONS

Exercise : 19

Question: 1

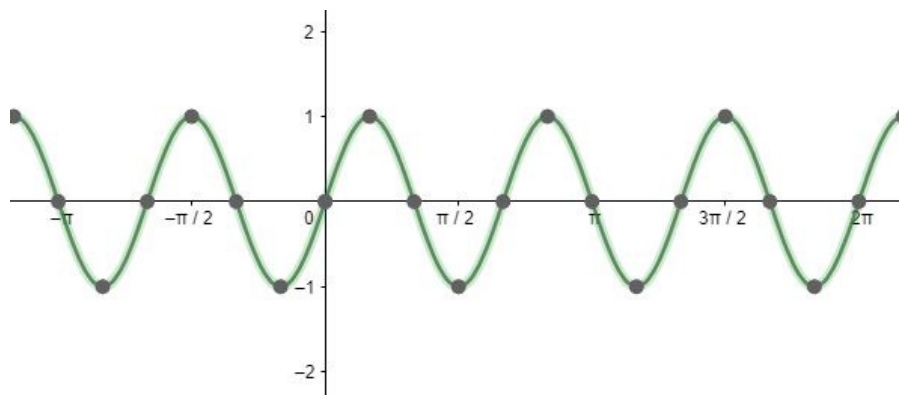
Draw the graph of

Solution:

To draw the graph of the curve $\sin(3x)$ assume some standard angle measures which will help in locating the points and drawing the curve.

X	$\frac{\pi}{6}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
Sin3x	1	0	-1	0	1	0

Therefore, the graph of curve $\sin(3x)$ can be drawn as



Here, the frequency of the function $\sin(x)$ is increased by 3 times.

Question: 2

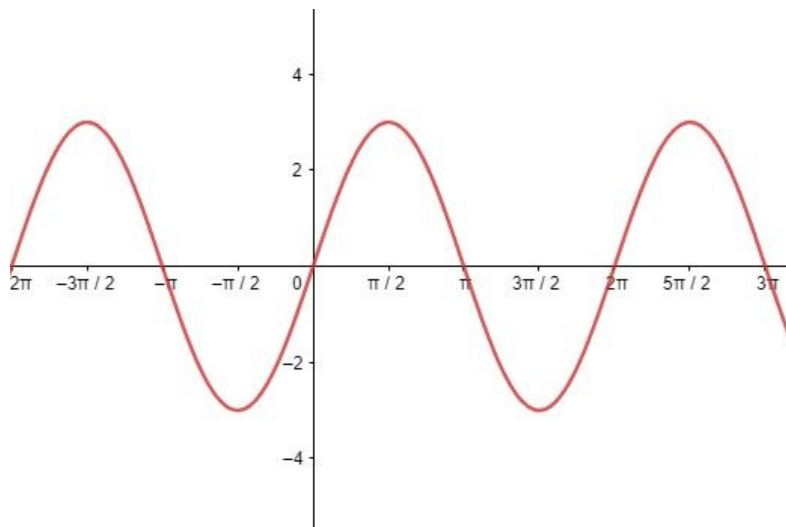
Draw the graph of

Solution:

To draw the graph of the curve $3\sin(x)$ assume some standard angle measures which will help in locating the points and drawing the curve.

X	$\frac{\pi}{6}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
3sin(x)	$\frac{3}{2}$	$\frac{3\sqrt{3}}{2}$	3	0	-3	0

Therefore, the graph of curve $3\sin(x)$ can be drawn as



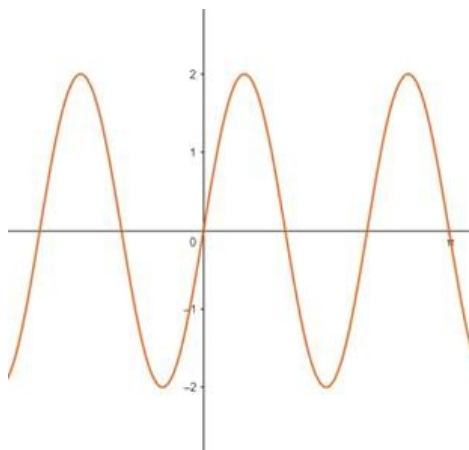
Here, the amplitude of the function $\sin(x)$ is increased by 3 times.

Question: 3

To draw the graph of the curve $2\sin(3x)$ assume some standard angle measures which will help in locating the points and drawing the curve

X	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
$2\sin(3x)$	2	0	2	0

The graph looks like:



Question: 4

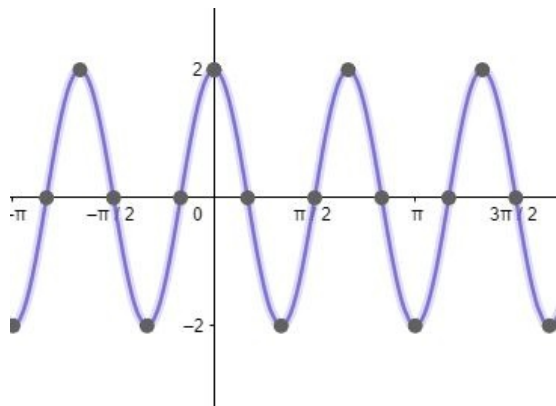
Draw the graph of

Solution:

To draw the graph of the curve $2\cos(3x)$ assume some standard angle measures which will help in locating the points and drawing the curve.

X	$\frac{\pi}{6}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
$2\cos(3x)$	0	-2	0	-2	0	2

Therefore, the graph of curve $2\cos(3x)$ can be drawn as



Here, the amplitude and frequency of the function $\cos(x)$ is increased by 2 and 3 times respectively.

Question: 5

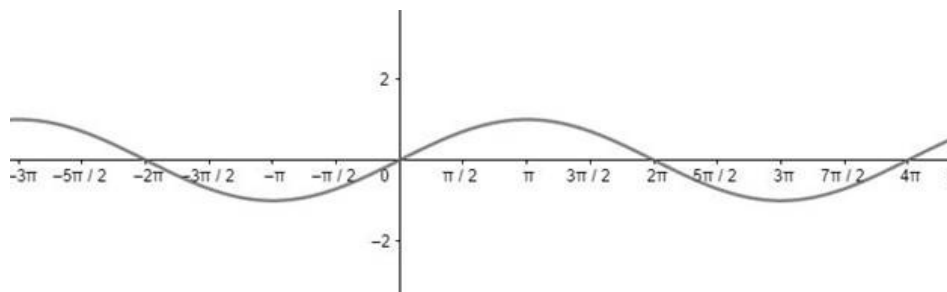
Draw the graph of

Solution:

To draw the graph of the curve $\sin(x/2)$ assume some standard angle measures which will help in locating the points and drawing the curve.

X	$\frac{\pi}{6}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
$\sin(x/2)$	$\frac{\sqrt{3}-1}{2\sqrt{2}}$	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	1	$\frac{1}{\sqrt{2}}$	0

Therefore, the graph of curve $2\cos(3x)$ can be drawn as



Here, the frequency of the function $\sin(x)$ is decreased by 0.5 times.

Question: 6

Draw the graphs o

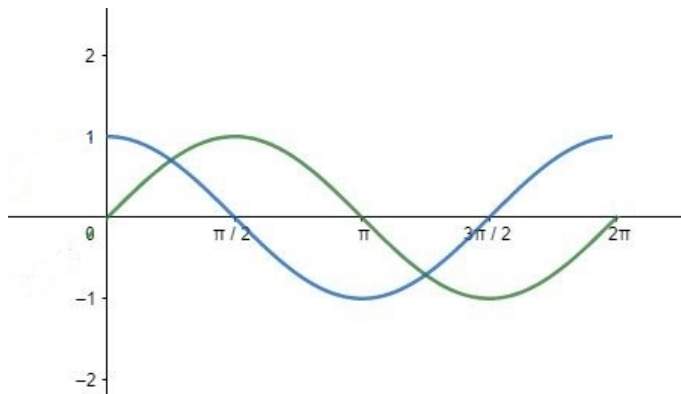
Solution:

For $\sin x$

X	$\frac{\pi}{6}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
Sinx	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	1	0	-1	0

For $\cos x$

x	$\frac{\pi}{6}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
cosx	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	0	-1	0	1



The green line represents curve for $\sin(x)$ and blue for $\cos(x)$ for $[0, 2\pi]$.

Question: 7

Draw the graphs o

Solution:

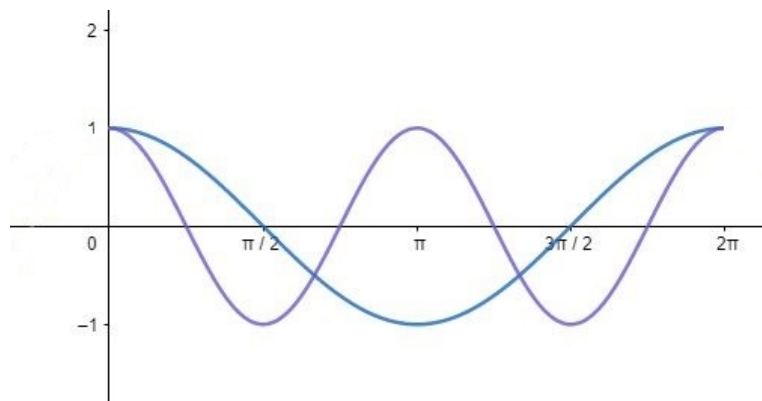
For $\cos x$

x	$\frac{\pi}{6}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
cosx	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	0	-1	0	1

For $\cos(2x)$

x	$\frac{\pi}{6}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
Cos(2x)	$\frac{1}{2}$	$-\frac{1}{2}$	-1	1	-1	1

The graph is:-



Blue line depicts curve $\cos(2x)$

Purple lines depict $\cos(x)$.